

PROJECT DESCRIPTION

- **Facilities Location:**

Morena Pump Station and Pipeline Brine Conveyance –
880 Sherman Street, San Diego, CA 92110

North City Water Reclamation Plant Expansion (NCWRP) –
4949 Eastgate Mall, San Diego, 92121

North City Pure Water Facility (NCPWF) –
4940 Eastgate Mall, San Diego, 92121

North City Pure Water Pump Station and Pipeline –
4949 Eastgate Mall, San Diego, 92121

North City Renewable Energy Project –
4949 Eastgate Mall, San Diego, 92121

MBC Improvements –
5240 Convoy, San Diego, CA 92111

- **Total and active water storage capacity:**

Miramar Reservoir has a storage capacity of 6,682 AF.

- **Sources of water supply:**

Link below provides an overview of the City's reservoirs, watershed and major aqueducts in the region providing current freshwater supplies:

<https://www.sandiego.gov/sites/default/files/legacy/water/pdf/operations/wsmmap.pdf>

The Pure Water North City Phase 1 program will produce 30 million gallons per day of newly produced purified water from wastewater supplies beginning 2021. As an indirect potable reuse (IPR) project with reservoir augmentation, this project will supplement freshwater supplies in Miramar reservoir with purified water, thereby enhancing water supply reliability for the City and the San Diego region.

- **Conveyance capacities for sources of water supply:**

Please see the City's 2015 Urban Water Management Plan (UWMP) and 2013 Recycled Water Study for related information.

- **Capacities for storage facility outlets, spillways, and direct diversions:**

The inflow rate of purified water to Miramar Reservoir is independent of hydrological conditions and will only vary about 10% on an annual cycle (less in the

summer and more in the winter) The outflow from the reservoir to the water treatment plant will remain in balance with the inflows such that the reservoir level will not vary appreciably. As such, there are no anticipated changes planned at outlets, spillways, or other major facilities at Miramar Reservoir. Requested capacities of Miramar Reservoir are listed on the attached Fact Sheet.

- **Storage facility capacity-elevation and area-capacity curves:**

Please see above response regarding and major changes at Miramar Reservoir. Requested capacity curves for Miramar Reservoir is attached.

- **All appurtenant facilities, including hydropower, recreation, ecosystem, and water quality management facilities:**

There are no hydropower facilities at Miramar Reservoir. The Reservoir has a five mile long paved service road that encircles the reservoir and is very popular for bicycling, jogging, walking, picnicking and other outdoor activities. Recreational users are permitted on this road seven days a week during normal operating days and hours. Also around the lake are 18 barbecues and 48 picnic tables where visitors can enjoy a picnic with friends or family. Fishing is also permitted at Miramar Reservoir. With a proper fishing license and a daily City fishing permit, patrons can fish from boats, use float tubes, waders, or simply fish from shore. The existing Reservoir has water quality measures in place to manage existing use as storage of raw water prior to treatment at Miramar Water Treatment Plant. The City plans to implement a Habitat Management Plan and an Invasive Species Management Plan as part of Pure Water Phase 1.

- **Expected beneficiaries and the location of benefits:**

WATER QUALITY BENEFITS:

Pure Water will address this priority directly, as well as address many of the other priorities listed in the quantification tables, by consistently reducing demand on the State Water Project by 33,600 acre-feet per year and thereby allowing for increasing outflows from the Delta.

Outfall Discharge and Suspended Solids Reduction - For twenty years, the City has demonstrated a strong commitment to the environment having successfully operated the Point Loma Wastewater Treatment Plant (PLWTP) with a modified NPDES permit. Over this period, the City has met water quality requirements and not negatively impacted the ocean environment under close scrutiny of State permitting agencies and opinions from scientists at the Scripps Institution of Oceanography. While the City has proven that all mandated requirements have been met, environmental stakeholders have noted that investing in Pure Water provides even greater environmental benefits. Below summarizes the City's input on the

PLWTP environmental benefit and our opinion of the stakeholders input on the PLWTP environmental benefit.

City's Input on Environmental Benefits - Implementing Pure Water provides significant environmental benefits to help offset future flows and total suspended solids. As growth occurs, future wastewater flows tributary to the Pure Water facilities will be treated to higher levels upstream of the PLWTP and not be discharged to the environment.

Stakeholders Input on Environmental Benefits - Stakeholders, including the San Diego Coastkeeper and the Surfrider Foundation (both participants in the Recycled Water Study that developed Pure Water) have stated their support for the Pure Water Program due to its environmental benefits. A major focus for these environmental stakeholder groups is removal of wastewater discharges to the watershed. They value Pure Water for its ability to immediately reduce flow and total suspended solids released to the environment.

Estimated Initial Quantitative Benefits - Water quality at the PLWTP is typically tied to flow and total suspended solids. The City has estimated the following comparative quality parameters for the PLWTP both with and without Pure Water in Year 2022:

- PLWTP without Pure Water
 - Average Daily Flow estimated at 156 million gallons per day
 - Total Suspended Solids estimated at 10,100 metric tons
- PLWTP with North City Pure Water Phase 1
 - Average Daily Flow estimated at 126 million gallons per day
 - Total Suspended Solids estimated at 8,400 metric tons

Reduced Salinity Benefits - One of the most significant public benefits locally will be provided by lower salinity purified water that will be blended with freshwater supplies at Miramar reservoir. Salinity impacts from irrigation with imported water can occur over time wherever irrigation occurs. When plants use the water, the salts are left behind in the soil and eventually begin to accumulate. Salinity inhibits root growth in plants, which in turn impact growth and viability of the plant. These impacts are increased with higher salinity in the irrigation water. Drought often accelerates the accumulation of salts. During rainfall events accumulated salts may be flushed from soils and end up in groundwater basins, and resurface in creeks or other water bodies downstream.

San Diego's current source water supplies are mostly from imported water sources – the Colorado River and the State Water Project. Water from the Colorado River is especially high in TDS, resulting in an accumulation of salts in San Diego soils over time.

The reverse osmosis process associated with the North City Pure Water Phase 1 project will remove all salts and minerals from water; however, post-conditioning of the water will add some minerals and salts back in. The resulting water is expected to have a TDS that is typically 130 mg/l. Potable water supplies in this part of the City's system have TDS levels averaging approximately 620 mg/l.

In the areas where purified water will be utilized and in downstream watersheds, salinity is perhaps one of the more limiting constituents when it comes to beneficial uses of groundwater. As described in the Region 9 Basin Plan existing beneficial uses for groundwater here include: municipal, agricultural and industrial uses. In addition, many surface waters in the area where purified water will be utilized exhibit salinity levels higher than is prescribed for beneficial use. Existing beneficial uses for inland surface waters here include: municipal, agricultural, recreational, warm freshwater habitat, cold freshwater habitat, wildlife habitat, habitat for threatened and endangered species; as well as areas for spawning, reproduction and/or early development of marine and/or freshwater fish. Initial calculations have shown that the use of Pure Water will result in the elimination of 57,430 lbs/day (or 10,470 tons/year) of TDS when compared to salinity levels in current potable water supply.

Irrigation with water with decreased salinity will flush salts from soils, and eventually help restore groundwater basins, and creeks or other water bodies. This will provide real ecosystem benefits for the region. In addition, it can be shown that there are other public benefits, i.e., municipal, agricultural recreational and industrial uses all that benefit from lower salinity water. Brief examples of these are summarized as follows:

Habitat Uses - Warm freshwater habitat, cold freshwater habitat, wildlife habitat, habitat for threatened and endangered species; as well as areas for spawning, reproduction and/or early development of marine and/or freshwater fish.

Recreational Uses - Benefits include more viable freshwater plant and fisheries. Local parks and landscapes would be enhanced by drought proof supply.

Municipal Uses – Benefits include reduced treatment, maintenance, and equipment replacement efforts and costs.

Agricultural Uses - Benefits include more productive plants; lower water use to leach salts from accumulating in the root zone of plants. Local agriculture would be enhanced by drought proof water supply.

Industrial Use - Benefits include reduced maintenance, equipment replacement, and treatment for required industrial processes.

Additional Benefit of Reduced Salinity - An additional benefit of lower TDS water supply is that lower salinity water has been shown to use 20% less water when compared to traditional supplies in the region (including non-potable reuse water) due to salt accumulation. It takes 20% higher salinity water to leach salts away from root zones of plants. This reduction in-turn leads to less demand on the State's water system and the Delta.

EMERGENCY RESPONSE BENEFITS:

The Pure Water North City Phase 1 program will address this priority directly by providing safe, reliable water during a wide range of emergency scenarios.

Since San Diego is at the terminus of the State's water system and the system is exposed to many different risks, having a diverse, reliable and resilient water portfolio is critically important to the region. While recent projects have provided additional sources of supply to the region and emergency storage, the region still needs more diverse supplies. In addition to consistently providing 33,600 acre-feet per year in new water supply for the San Diego Region, North City Pure Water Phase 1 will provide emergency response water supplied for human health and safety purposes during declared emergencies such as major earthquakes or other significant challenges with the system. Since the City is interconnected with twenty-three other water retailers in the San Diego Region via the San Diego County Water Authority (SDCWA), beneficiaries of this emergency response water include the entire SDCWA region.

RECREATION BENEFITS:

Pure Water will address this priority directly through educational and public outreach benefits of the North City Pure Water Facility Visitor Center and community outreach efforts.

Relationships to existing water project facilities -Please see the 2015 UWMP and 2013 Recycled Water Study for related information on how Pure Water Phase 1 is integrated with other water facilities.

Water storage evaporation loss or other losses as a function of time-of-year and area - Miramar Reservoir when full has 162 surface acres, a maximum water depth of 114 and a storage capacity of 6,682.4-acre feet. Evaporation and other losses are not anticipated to be of any significance to North City Pure Water Phase 1. The following attachment, San Diego Miramar hydrography 1960-2016, provides more information on evaporation losses.

Any other features that affect benefits or impacts - Unlike many traditional storage projects which rely on predictable precipitation and runoff, Phase 1 of North City Pure Water will continuously provide an annual average of 30 mgd of reliable drinking water supply that is locally controlled and drought-proof. Unlike many traditional storage projects which rely on predictable precipitation and runoff. As a result, the benefits found in Phase 1 of Pure Water will be consistent for the life of the Project. Impacts of Pure Water Phase 1 will be mitigated through local measures that include avoidance and minimization measures that reduce impacts to the environment. Revegetation and habitat restoration efforts required are not extensive and would require temporary irrigation for plant establishment purposes only. As a result, the impacts of Phase 1 of Pure Water will be consistently mitigated.